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20 January 2009

Mr. Gary Miller
Task Order Monitor
U.S. Environmental Protection Agency (EPA)
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

**Subject: Field Oversight Activities Report (7, 13 January 2009)
Phase 5 Ground Water Investigation
Gulfco Marine Maintenance Site RI/FS Oversight
U.S. Environmental Protection Agency Region 6
Remedial Action Contract 2
Contract: EP-W-06-004
Task Order: 0006-RICO-06JZ**

Dear Mr. Miller:

EA Engineering, Science, and Technology, Inc. (EA) is submitting this Field Oversight Activities Report that summarizes the remedial investigation/feasibility study (RI/FS) oversight and split sampling activities conducted on 7 and 13 January 2009, respectively, at the Gulfco Marine Maintenance site in Freeport, Brazoria County, Texas.

If you have any questions regarding this submittal, please call me at (972) 459-5040.

Sincerely,

A handwritten signature in black ink, appearing to read 'L. Vega', is written over a light blue horizontal line.

Luis Vega
Project Manager

Enclosure

cc: Michael Pheeny, EPA Contracting Officer (letter only)
Rena McClurg, EPA Project Officer (letter only)
Fritz Meyer, EA Program Manager (letter only via e-mail)
Jeff Hills, EA Financial Manager (letter only via e-mail)
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**Field Oversight Activities Report (7, 13 January 2009)
Phase 5 Ground Water Investigation**

**Gulfco Marine Maintenance Site
Freeport, Brazoria County, Texas
EPA Identification No. TXD055144539**

**Remedial Action Contract 2 Full Service
Contract: EP-W-06-004
Task Order: 0006-RICO-06JZ**

Prepared for

U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Prepared by

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January 2009
EA Project No. 14342.06
Revision 00

1.0 INTRODUCTION

This Field Oversight Activities Report summarizes remedial investigation/feasibility study (RI/FS) oversight activities conducted on 7 January and 13 January 2009, at the Gulfco Marine Maintenance (Gulfco) Superfund site, located in Freeport, Brazoria County, Texas. As requested by the U.S. Environmental Protection Agency (EPA), EA Engineering, Science, and Technology, Inc. (EA) performed oversight of the Phase 5 Ground Water Investigation conducted by the potentially responsible party (PRP)'s primary consultant, Pastor, Behling & Wheeler, LLC (PBW). Additionally, EA obtained split samples of ground water, as directed by EPA.

During field oversight activities, EA is required to evaluate and document PRP performance of field work and confirm PRP adherence with applicable standard operating procedures (SOPs) and the following EPA-approved documents:

- PBW's RI/FS Work Plan (PBW 2005);
- PBW's Sampling and Analysis Plan (PBW 2006);
- PBW's Memorandum: "Proposed Phase 4 Groundwater Investigation Activities, Gulfco Marine Maintenance Site, Freeport, Texas." (PBW 2008a); and
- PBW's Memorandum: "Proposed Phase 5 Groundwater Investigation Activities, Gulfco Marine Maintenance Site, Freeport, Texas" (PBW 2008b).

Section 2 summarizes oversight and split sampling activities associated with the Phase 5 Ground Water Investigation, which included (1) cone-penetrometer testing (CPT) and membrane interface probe (MIP) investigation; (2) piezometer installation; and (3) ground water sampling activities.

2.0 PHASE 5 GROUND WATER INVESTIGATION

On 7 and 13 January 2009, EA conducted oversight of the Phase 5 Ground Water Investigation, which included (1) CPT/MIP investigation; (2) piezometer installation; and (3) ground water sampling activities. The following subsections discuss these activities in greater detail.

2.1 CPT/MIP INVESTIGATION AND PIEZOMETER INSTALLATION

On 7 January 2009, EA conducted oversight of a CPT/MIP investigation performed by PBW and its CPT/MIP subcontractor, Fugro Geosciences, Inc. (Fugro). Participants included:

- Mr. Eric Pastor, PBW Project Manager
- Mr. Len Mason, PBW
- Fugro CPT/MIP Operators
- Mr. Mark Paddack, EA Geologist

According to EA oversight personnel, PBW performed field activities in accordance with the aforementioned EPA-approved documents.

2.1.1 Site Activities – 7 January 2009

At 0740 hours, EA arrived at the Gulfco site to conduct oversight of field activities scheduled for that afternoon. EA met with PBW.

Weather: Sunny, low in the mid 40's °F. Forecast high of 68 °F. Winds light and variable but forecasted to be out of the south to southwest by afternoon.

At 0752 hours, PBW (Eric Pastor) showed EA the **OCPT5** installation location.

At 0752 hours, Fugro CPT/MIP equipment and personnel arrived on site.

From 0755 – 0832 hours, PBW conducted the safety briefing and discussed proposed activities.

PBW discussed proposed activities, which included the following general procedures also outlined in the Proposed Phase 5 Groundwater Investigation document:

- A Zone C investigation will be performed by advancing one boring using a CPT equipped with a MIP. The location will be in close proximity to well **OMW-20**.
- The single proposed CPT/MIP boring will be back-grouted following its completion. Due to difficulties with soft soil, pressure grouting equipment mounted on the CPT rig will be used to avoid driving support truck to push location. Pressure grouting was done by Fugro using a bentonite clay slurry to grout the boreholes using a tremie pipe.
- Subsurface data collected from the CPT/MIP boring will be evaluated and used to install a piezometer at the single proposed location. The boring for the piezometer will be installed using the CPT rig, and well screen will be set into the base of the Zone C aquifer. The depth of the piezometer will be based on the outcome of the CPT/MIP exploratory borehole.
- PBW (Eric Pastor) requested Fugro to install surface casing at the push location due to shallow surface water at the proposed piezometer installation site. PBW also indicated the piezometer needed to be completed three feet above ground surface due to the area being prone to frequent flooding due to tidal fluctuations and/or heavy rainfall.

At 0948 hours, PBW and Fugro mobilized to the location where **OCPT5** was to be installed and began preparation for the MIP investigation (Appendix A, Photograph 1).

At 1020 hours, Fugro began pushing the CPT/MIP tool at the **OCPT5** location. EA oversight of the process was difficult due to limited space within the CPT rig. PBW agreed to keep EA oversight personnel fully informed of the progress and data interpretation. At 1022 hours and

approximately 4 feet below ground surface (bgs), PBW made a determination to push CPT/MIP to 20 feet bgs without taking GC (gas chromatograph) readings in order to save time. At approximately 11.04 feet bgs, cone pressure dropped, suggesting that Zone A had been encountered. At 17 feet bgs, tip and sleeve pressure increased, suggesting clay or other similar units more cohesive in character had been encountered. At 1032 hours, the CPT had progressed to a depth of 21 feet bgs and encountered a thin sandy clay stringer with an underlying zone of interbedded sandy clays, clays, and silty clays. Lynn Mason (PBW) indicated that Zone B was not present at this location and that Zone A is primarily a sandy clay unit. By 1043 hours, the CPT had progressed to a depth of 30 feet bgs, and CPT readings suggested that clay was the predominate lithology encountered at this depth.

At 1113 hours, CPT data indicated a decrease in sleeve pressure, and at 62 feet bgs, a small spike in tip pressure suggested a zone of sandy/shelly material. Another tip pressure spike was observed at 71-72 feet bgs. At 73 feet bgs, CPT sleeve pressure increased suggesting a unit with higher clay content. At 1155 hours, CPT data indicated a depth of 80 feet bgs had been achieved. At this time, PBW personnel discussed the issue of where to set the well screen for **OCPT5**. PBW had only planned on installing 10 feet of well screen, which would prevent placement of well screen across both coarser-grained zones noted above.

At 1229 hours, Fugro completed pulling CPT/MIP push rods and began preparation for pressure grouting the CPT/MIP borehole. By 1300 hours, Fugro completed pressure grouting the borehole with bentonite grout using a tremie pipe.

At 1359 hours, Fugro set up on the push location for installation of **OCPT5** and installed temporary surface casing to minimize surface water flow into the piezometer borehole (Appendix A, Photograph 2). At 1421 hours, the Fugro crew fabricated a 5-foot section of blank riser with a bentonite seal consisting of a sock containing bentonite powder (Appendix A, Photograph 3). At this point, additional discussion occurred regarding the construction of **OCPT5**, and at what depth well screen should be set for this piezometer. After confirming that Fugro was using 5-foot sections of blank riser casing, it was agreed that the two 5-foot sections of pre-packed well screen would be installed at two separate intervals, with a 5-foot section of blank riser situated between the two well screen sections. The agreed-upon design for **OCPT5** allowed the piezometer to be installed in a manner that recognized ground water contributions from the sandy/shell unit noted at 62 feet bgs, as well as the deeper sandy/shell unit encountered at 71 to 72 feet bgs. Table 1 provides a summary of the construction details for **OCPT5**.

TABLE 1 OCPT5 PIEZOMETER CONSTRUCTION

ID	Total Depth (feet bgs)	Screen Interval (feet bgs)	Well Casing	Outer Casing	Surface Completion
OCPT5	74	59-64 69-74	0.75-inch PVC	None	Aboveground
Notes: bgs = below ground surface PVC = polyvinyl chloride					

At 1453 hours, the Fugro crew had concerns regarding the pressure required to push the CPT rods. The CPT rig was requiring approximately 12 tons of pressure in order to advance the push rods, and the crew was worried that increasing the pressure exerted on rods might cause rod failure within the upper portion of the borehole, where less cohesive units had been encountered. However, at 1506 hours, the desired total depth of 74 feet bgs was reached by the Fugro crew.

Fugro then proceeded with construction of the piezometer by assembling the well screen, which consisted of a bottom 5-foot section of prepacked well screen (with end cap on the bottom), followed by a 5-foot section of blank riser, and the second (top) 5-foot section of prepacked well screen. A 2.5-foot section of blank riser, equipped with a foam plug was then installed on the top section of pre-packed well screen (Appendix A, Photographs 4-5), followed by the 5-foot section of blank riser containing the bentonite plug (sock) (Appendix A, Photograph 6). The remainder of the piezometer was constructed of blank riser to 3 feet above ground surface.

At 1521 hours, Fugro began pulling the push rods following installation of the **OCPT5** casing. By 1605 hours, Fugro had moved the CPT rig and began making preparations for well pad construction. At 1645 hours, well pad construction was completed (Appendix A, Photographs 7, 8, and 9). **OCPT5** was placed approximately 20 feet to the northeast of **OMW20** (Appendix A, Photograph 8).

At 1703 hours, Fugro mobilized the CPT to the trailer in preparation for demobilization from the site. EA departed the site.

2.2 GROUND WATER SAMPLING

2.2.1 Site Activities – 13 January 2009

On 13 January 2009, EA obtained split ground water samples as directed by EPA. Participants included:

- Mr. John Britton, PBW
- Mr. Duane Thomas, EA Environmental Scientist

At 0730 hours, EA arrived at the Gulfco site.

Weather: Sunny, winds 10-20 mph, high temperature around 56 °F.

At 0734 hours, PBW began gauging selected monitoring wells and piezometers. Water levels were determined using a Keck® water level indicator (Table 2).

TABLE 2 GAUGING INFORMATION

Monitoring Well/Piezometer ID	Depth to Water (feet below top of casing)
OCPT4	13.16
OCPT5	12.72
NE4CPT2	9.86
NG3CPT1	6.93
NC2CPT3	8.72
NE4MW32C	7.22

At 0820 hours, PBW set up for low-flow sampling at **NE4MW32C**. According to the PBW representative, dedicated sample tubing had already been set at mid-screen level. Purging and sample collection was conducted using a peristaltic pump. Water quality parameters were recorded using a YSI® Model 556 water quality meter; however, water level drawdown was not measured during low-flow sampling activities. Sample time for **NE4MW32C** was recorded as 0915 hours. Appendix A, Photograph 10 depicts PBW ground water sampling activities.

At 0917 hours, PBW began setting up for low-flow ground water sampling at **OCPT5** using a peristaltic pump. According to the PBW representative, dedicated sample tubing had already been set midway between the two screened intervals. Appendix A, Photograph 11 depicts the ground water sampling setup at **OCPT5**. Sample time for **OCPT5** was recorded as 1000 hours.

According to EA oversight personnel, PBW performed ground water sampling activities in accordance with the aforementioned EPA-approved documents, with the following exception:

- Water level drawdown was not measured for either well/piezometer during low-flow sampling activities. Although measurement of water level drawdown during piezometer sampling activities would have been difficult based on limited space within the 0.75-inch-diameter casing, water levels could have been obtained immediately prior to and following implementation of low-flow sampling activities.

EA was unable to perform oversight of the following activities because they were completed prior to EA's arrival onsite:

- Dedicated sample tubing was measured and installed within the wells/piezometers prior to EA's arrival.

Table 3 summarizes the ground water samples collected on 13 January 2009.

TABLE 3 GROUND WATER SAMPLE SUMMARY (13 JANUARY 2009)

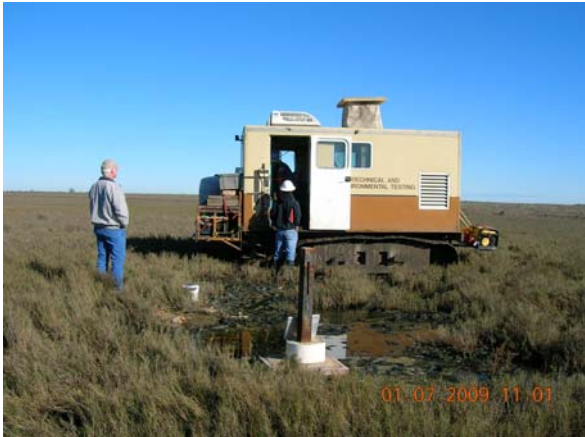
PBW Sample ID	PBW Analytical Parameters	Date Collected	Sample Collection Time	EA Split Sample ID	EA Analytical Parameters
NE4MW32C	VOCs	01/13/09	0915 hours	NE4MW32C	VOCs
OCPT5	VOCs	01/13/09	1000 hours	OCPT5	VOCs

At 1015 hours, EA departed the site for Houston, where EA then completed the appropriate sample documentation and prepared the samples for shipment to the laboratory. Sample coolers were sealed by EA at the FedEx facility. At 1350 hours, EA relinquished the sample coolers to FedEx for overnight shipment to its non-team subcontractor laboratory, TestAmerica Laboratories.

REFERENCES

- Pastor, Behling & Wheeler, LLC (PBW). 2005. "Remedial Investigation and Feasibility Study (RI/FS) Work Plan for the Gulfco Marine Maintenance Superfund Site, Freeport, Texas." May.
- PBW. 2006. "Sampling and Analysis Plan – Volume 1. Field Sampling Plan for the Gulfco Marine Maintenance Superfund Site, Freeport, Texas." May.
- PBW. 2008a. Memorandum to Mr. Gary Miller, U.S. Environmental Protection Agency (U.S. EPA): "Proposed Phase 4 Groundwater Investigation Activities, Gulfco Marine Maintenance Site, Freeport, Texas." 11 February.
- PBW. 2008b. Memorandum to Mr. Gary Miller, U.S. Environmental Protection Agency (U.S. EPA): "Proposed Phase 5 Groundwater Investigation Activities, Gulfco Marine Maintenance Site, Freeport, Texas" 12 November.

Appendix A
Photographs



Photograph 1 Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: CPT/MIP location OCPT5.



Photograph 2 Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: Surface casing for OCPT5.



Photograph 3 Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: Prep of pre-packed bentonite seal for OCPT5.



Photograph 4 Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: Installation of pre-packed screen with plug.



Photograph 5 Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: View of pre-packed screen with foam plug.



Photograph 6 Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: Installation of pre-packed bentonite seal.



Photograph 7
Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: Installation of stick-up well monument for OCTP5.



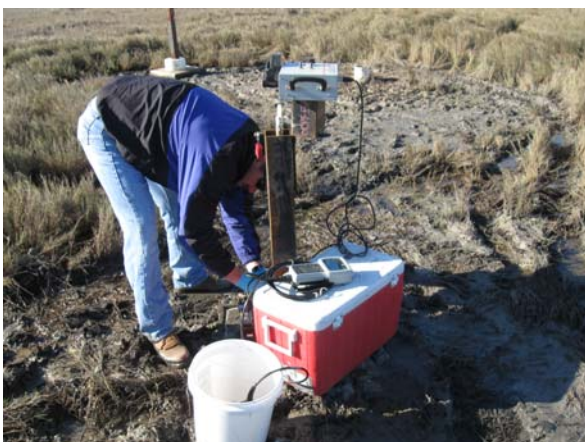
Photograph 8
Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: OCPT5 in relation to OMW-20.



Photograph 9
Date: 7 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: Completed OCPT5 well monument and pad.



Photograph 10
Date: 13 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: Low flow sampling set up for NE4MW32C



Photograph 11
Date: 13 January 2009
Site: Gulfco Marine Maintenance Superfund Site
Description: Low flow sampling set up for OCPT5